

REMARKS

SECTION 102 REJECTION OF CLAIMS 49 AND 51

The present office action summarily rejects claims 49 and 51 together with claim 1. However, these claims have limitations that are not present in claim 1. In particular, claim 49 recites:

"a delivery fiber having a distal end adjacent to the first reflective surface, the distal end being stationary relative to the first reflective surface during rotation of the housing; and

a collection fiber having a distal end adjacent to the second reflective surface, the distal end being stationary relative to the second reflective surface during rotation of the housing."

In *Boppart*, the reflective surfaces are on the rotating mirror 58. As the mirror 58 rotates, the reflective surfaces move relative to the distal ends of the optical fibers. There is no indication that the mirror 58 and the fibers somehow rotate together. Therefore, *Boppart* fails to meet the above limitations.

Claim 50 recites the limitations of:

"a first reflective surface disposed on the rotatable housing, the first reflective surface rotating at the selected angular velocity when the rotatable housing rotates at the selected angular velocity;

a delivery fiber having a distal end adjacent to the first reflective surface, the distal end rotating at the selected angular velocity when the first reflective surface rotates at the selected angular velocity."

According to these limitations, the distal end of the delivery fiber and the first reflective surface move with the same angular velocity.

In *Boppart*, the rotating mirror 58 spins, whereas the fibers do not. Therefore, the rotating mirror 58 does not move at the same angular velocity as the distal end of the delivery fiber.

SECTION 102 REJECTION OF CLAIM 41

Claim 41 is summarily rejected with claim 1. However, claim 41 includes limitations not present in claim 1. In particular, and as noted in the previous response, claim 41 recites

disposing said beam redirectors at an angle with respect to said longitudinal axis, the angle being proportional to numerical apertures of said first and second energy fibers

The present Office Action fails to identify where *Boppart* discloses any such limitation. In an effort to expedite prosecution, Applicant would ordinarily speculate on what the Examiner may have been thinking. But in this case, Applicant is unsure where to begin.

SECTION 102 REJECTION OF CLAIM 2

With regard to claim 2, the Examiner states that "*Boppart* et al illustrate in FIG. 8B where the reflective surface may be a rotating prism that redirects the beam."

Claim 2 recites the additional limitation

"wherein said housing comprises a frame member having a slot arranged therein for receipt and alignment of said first and said second reflective surfaces."

Applicant fails to see the relevance of the rotating prism to the additional limitation of claim 2. Accordingly, Applicant requests reconsideration and withdrawal of the section 102 rejection of claim 2.

SECTION 102 REJECTION OF CLAIM 3

With regard to claim 3, the Examiner states that "*Boppart* et al illustrate in FIG. 8B where the reflective surface may be a rotating prism that redirects the beam."

Claim 3 recites the additional limitation

"wherein said first reflective surface and said second reflective surface each comprise a beam redirecting member."

FIG. 8B shows only a single fiber and therefore lacks the limitations of the delivery and collection fiber. In addition, FIG. 8B fails to show the first and second reflective surfaces.

To anticipate a claim, the reference must show the claimed invention. It is not enough to identify a reference that discloses bits and pieces of the claimed invention. Otherwise, one could anticipate any claim by simply citing a suitable encyclopedia.

The Examiner appears to be relying on the structure in FIG. 21B to supply much of what FIG. 8B lacks. However, the Examiner may not simply pick and choose elements from different unrelated structures that happen to be disclosed in the same reference.

SECTION 103 REJECTIONS

The Examiner asserts that it would have been obvious to combine *Winston* and *Boppart* "to improve OCT imaging of inner walls of the lumen."

Winston discloses a device for identifying a plaque with ultrasound and illuminating it with laser radiation. This has nothing to do with OCT.

The Examiner appears to be suggesting that there exists some sort of relationship between optical coherence tomography and using ultrasound to detect plaque. It is unclear what sort of relationship there might be. Optical coherence tomography uses light to create a tomographic image. Ultrasonic plaque detection relies on sound, not light, and does not involve creating an image. Therefore, it is unclear how methods for ultrasonically detecting plaque would be of any use in creating a tomographic image.

Applicant submits that the proposed motivation to combine *Winston* and *Boppart* makes little technical sense because techniques for ultrasonic plaque detection would not be useful in improving OCT imaging.

SECTION 103 REJECTION OF CLAIM 4

Claim 4 recites the additional limitation:

"wherein said slot comprises shoulders to secure and align said reflective surfaces therein."

The Examiner draws attention to a portion of *Winston* that discusses the splined output shaft in *Winston* FIG. 2. Applicant speculates that the Examiner regards these splines as being "shoulders to secure and align said reflective surfaces."

However, inspection of *Winston* FIG. 1 shows that the structure of *Winston* FIG. 2 is nowhere near any reflective surfaces. Hence, it is unclear how the splines shown in FIG. 2 can possibly "secure and align said reflective surfaces."

SECTION 103 REJECTION OF CLAIM 5

Claim 5 recites the additional limitation:

"wherein said housing comprises a proximal stem portion for receipt into a catheter sheath to permit manipulation of said tip from a proximal location."

The Examiner draws attention to a portion of *Winston* that discusses the lined sleeve 24 which fits into the output shaft 22 in *Winston* FIG. 2. Applicant speculates that the Examiner regards the sleeve 24 as being "a proximal stem portion for receipt into a catheter sheath."

It is quite plain from inspection of FIG. 2 that the sleeve 24 of *Winston* is not a part of any housing, as required by claim 3.

SECTION 103 REJECTION OF CLAIM 32

Claim 32 recites the additional limitation:

"said first reflective surface and said second reflective surface are disposed at an angle proportional to the numerical aperture of said first and second fibers to yield a light beam with adjacent edges that are parallel to one another."

In rejecting claim 32, the Examiner states that

"the reflective surfaces operate independently; therefore the energy delivery is independent."

The relevance of the Examiner's remark to the above claim limitation, if any, is far from clear. After all, claim 32 does not even recite independently operating reflective surfaces.

It is quite plain that the cited art fails to disclose the foregoing additional limitation of claim 32 and that therefore this rejection should be withdrawn.

SECTION 102 REJECTION OF CLAIM 1

The Examiner states that

"*Boppart et al.*'s catheter is capable of being rotated and the reflective surfaces in *Boppart et al.* are within the housing."

Housing supports reflective surfaces

Applicant points out that claim 1 recites:

"said housing supporting first and second reflective surfaces."

Thus, according to claim 1, the housing supports the mirrors.

The Examiner points out that in *Boppart*, the reflective surfaces (i.e. the mirror 58) "are within the housing." But this does not mean that the housing "supports" the surfaces.

In *Boppart*, the reflective surfaces are the blades of the rotating mirror. It is the rotating shaft 316, and not the housing, that supports these blades. It is quite plain from inspection of FIG. 21A that one could dissolve the housing and the reflective surfaces would remain where they always were: supported by the shaft.

Catheter sheath rotatably supports housing

Claim 1 also recites

"an elongated housing rotatably supported on a flexible catheter sheath."

The Examiner suggests that since *Boppart's* catheter "is capable of being rotated" it somehow follows that *Boppart* teaches this claim limitation. But the mere fact that one can rotate *Boppart's* catheter as a whole does not mean that the catheter "rotatably supports" a housing.

Applicant suspects the Examiner has ignored the word "rotatably" and is therefore reading the claim as if it said "an elongated housing [rotatably] supported on a flexible catheter sheath."

The foregoing arguments apply to the remaining independent claims, as well as to all claims dependent thereon.

SECTION 103 REJECTION OF CLAIM 6-8

Claim 6 recites a housing that

"comprises a frame member having a proximal end and a distal end, with an upstanding proximal block and an upstanding midblock, each block having an adjacent pocket for receipt of a reflective surface attachable therein."

The Examiner suggests that the disclosure at col. 5 line 65 to col. 6, line 11 of *Winston* discloses this limitation.

The cited language describes FIGS. 8 and 9, which together show a mechanism for causing the probe to reciprocate in and out. In particular, FIG. 9 discloses a rotating cam 78 that engages flanges 76 coupled to the tube 72 by a bearing 74. As the cam 78 rotates, it pushes against the flanges 76. This causes the tube 72 to reciprocate.

Applicant speculates that the Examiner regards the flanges 76 as the "upstanding proximal block" and "upstanding midblock" and that the space therebetween is the claimed "adjacent pocket."

It is quite apparent, however, that the space between the flanges 76 receives the cam 78, and not a reflective surface as required by the claim.

Claim 7 recites the additional limitation that the reflective surface be "a mirror glued into said pocket." The Examiner has not identified any mirror glued into any structure in *Winston*.

Claim 8 recites the additional limitation that "each of said upstanding blocks has a bore therethrough for receipt of one of said fibers." To the extent the flanges 76 are the "upstanding blocks," it is quite apparent that there is no bore extending therethrough, and that there are no fibers anywhere near those flanges 76.

SECTION 103 REJECTION OF CLAIMS 13-15

Claim 13 recites the additional limitation that the "reflective surfaces are integral with said housing."

The Examiner suggests that the above limitation is disclosed by *Winston* at col. 4, between lines 24-57.

The only mention of a reflecting surface in the above passage is the reflector 38, which is described between lines 62-65 as a concave reflector that receives an ultrasonic signal, and which is pictured on FIGS. 4 and 5.

It is apparent from inspection of FIGS. 4 and 5 that the reflector 38 is a discrete element, and is not integral with any housing.

Claims 14-15 depend on claim 13 and are therefore allowable for at least the same reasons.

SECTION 103 REJECTION OF CLAIM 16

Claim 16 recites the additional limitation that

"said housing comprises a cylindrically shaped member having said first and second reflective surfaces machined thereon, and wherein said first and second reflective surfaces are non-parallel with respect to one another."

The Examiner suggests that this limitation is disclosed by *Winston* FIGS. 4, 5, and 12A.

However, while the foregoing figures show non-parallel reflective surfaces, they do not show reflective surfaces that are machined onto a cylindrically shaped member. In all the cited figures, the reflective surfaces appear to be discrete elements that are simply attached to the housing in some way.

SECTION 103 REJECTION OF CLAIM 18

Claim 18 recites the additional limitation of a housing that "includes a bendable reflective surface."

The Examiner suggests that this limitation is disclosed by *Winston* FIGS. 4, 5, and 12A.

Although the cited figures show reflective surfaces, it is not possible to determine from them whether any of those are "bendable reflective surfaces."

FIGS. 4 and 5 show a concave reflective surface. But this does not mean that it is a "bendable reflective surface." The mere fact that a reflective surface happens to be concave does not mean it is a "bendable reflective surface." A telescope mirror, for example, is typically parabolic; yet one of ordinary skill would be unlikely to regard such a mirror as "bendable."

SUMMARY

Applicant has specifically addressed only selected claims. This is not intended as an admission that no arguments exist in support of patentability of those claims not specifically referred to.

Now pending in this application are claims 1-49 and 51. Due to an error in claim numbering, there is no claim 50. Of these, claims 1, 20, 33, 39, 49, and 51 are independent. Claims 9-12, 26-29, and 38 have been deemed allowable.

No additional fees are believed to be due in connection with the filing of this response. However, to the extent fees are due, or if a refund is forthcoming, please adjust our deposit account 06-1050.

Respectfully submitted,

Date: July 12, 2006



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906
21376044.doc